

PCT

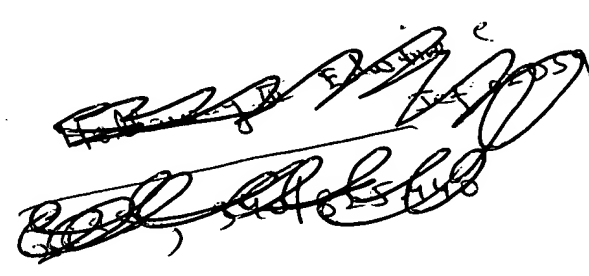
WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>G06F 17/00, 17/60, 5/00, 7/08</b>		A1	(11) International Publication Number: <b>WO 00/03328</b>
			(43) International Publication Date: 20 January 2000 (20.01.00)
(21) International Application Number: PCT/US99/14343			(81) Designated States: BR, CA, CN, JP, KR, MX, SG, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).
(22) International Filing Date: 24 June 1999 (24.06.99)			
(30) Priority Data:			
09/113,633 10 July 1998 (10.07.98) US			
09/123,291 28 July 1998 (28.07.98) US			
(71) Applicant: MOTOROLA INC. [US/US]; 1303 East Algonquin Road, Schaumburg, IL 60196 (US).			
(72) Inventors: HYMEL, James, Allen; 7738 Blairwood Circle East, Lake Worth, FL 33467 (US). INDEKEU, Jack, P.; 7594 Windermere Circle, Lake Worth, FL 33467 (US). BRIANCON, Alain, Charles; 800 Elmbrook Court, Southlake, TX 76092 (US). LONG, Christopher, Richard; 698 S.W. 5th Street, Boca Raton, FL 33486 (US).			
(74) Agents: BETHARDS, Charles, W. et al.; Motorola Inc., Intellectual Property Dept., 5401 North Beach Street/MS E230, Fort Worth, TX 76137 (US).			

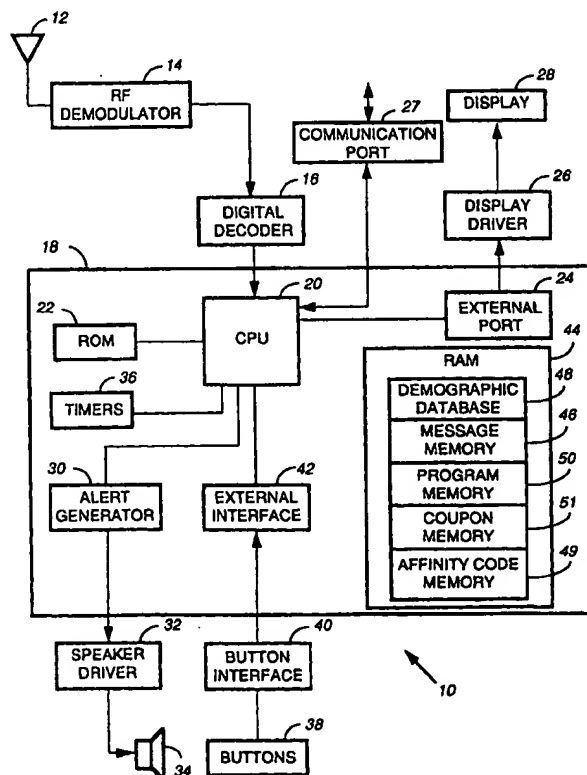
Published  
With international search report.



(54) Title: METHOD AND APPARATUS IN A WIRELESS COMMUNICATION SYSTEM FOR USING A SELECTIVE CALL RECEIVER TO PROVIDE DEMOGRAPHIC INFORMATION, REDEEM COUPONS, AND EMULATE AFFINITY CARDS

(57) Abstract

Demographic information concerning the user of an SCR (Selective Call Receiver) (10) is stored in the SCR (10). The demographic information (60) is displayed on the SCR (10) in bar code format such that it can be read by a bar code scanner (132), as in a store (130) or at a point-of-sale (154). In one embodiment, a stored coupon is also displayed in bar code format so that it can be read and redeemed at a point-of-sale. In another embodiment, a stored affinity card code and a unique identifier are displayed in bar code format so that they can be read to identify a selected affinity group and the customer at the point-of-sale.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

**METHOD AND APPARATUS IN A WIRELESS COMMUNICATION  
SYSTEM FOR USING A SELECTIVE CALL RECEIVER TO PROVIDE  
DEMOGRAPHIC INFORMATION, REDEEM COUPONS, AND  
EMULATE AFFINITY CARDS**

5

**Related Application**

This application is a continuation-in-part of Attorney Docket No.  
PT02940U, mailed July 8, 1998, by Hymel et al., entitled "METHOD OF  
10 USING A SELECTIVE CALL RECEIVER TO PROVIDE DEMOGRAPHIC  
INFORMATION AND REDEEM COUPONS."

**Field of the Invention**

This invention is generally directed to methods and an apparatus for  
15 using portable Selective Call Receivers (SCRs) to redeem coupons, emulate  
affinity cards, and provide demographic data on the users of the SCRs.

**Background of the Invention**

SCRs such as pagers and other forms of wireless message receivers are  
20 capable of receiving more than personal messages from their messaging  
services. News, stock quotes, advertisements and other information services  
can now be transmitted to subscribers.

The sponsors of the advertisements and certain other commercial  
messages would like to know who is receiving and reading their messages.  
25 Some of this information can be obtained using the techniques disclosed in  
U.S. Application Serial No. 08/627642, filed April 4, 1996 and entitled  
"Advertiser Pays Information and Messaging System and Apparatus".

It is also possible to send to SCRs coupons that can be used to  
purchase products or services at reduced prices. These coupons can be sent  
30 to a large number of people by group messaging, but the sponsor of the  
coupons will not readily know who received the coupons and who used  
them. That type of information, plus certain other demographic information  
concerning recipients of the coupons, can be difficult to obtain. Users of the  
coupons do not desire to spend much of their own time supplying that  
35 information; and stores where the coupons are redeemed are likewise  
reluctant to provide the resources required to collect this information.

In addition, affinity cards are becoming increasingly popular. Such cards typically are issued by a sponsor, e.g., a grocery store chain, and typically have an encoded magnetic stripe which can be read at checkout to identify the user. The sponsor's computer then collects and stores  
5 information about the user's purchases. In return, the affinity card entitles the user to various discounts determined by the sponsor. As the number of different affinity cards carried by the user increases, the need to consolidate the cards into a single entity becomes apparent.

A convenient and cost effective way of collecting demographic  
10 information concerning people who receive and use coupons can benefit not only the sponsors of coupons, but also the people who use SCRs by providing them with coupons that they will want to use. In addition, a convenient and cost effective way of consolidating affinity cards can benefit both sponsors and users by eliminating card clutter, thereby making the  
15 affinity cards more convenient to use.

### Brief Description of the Drawings

FIG. 1 is a block diagram of an SCR that operates according to the invention;

5 FIG. 2 shows the display area of an SCR that is displaying a bar coded coupon;

FIG. 3 shows the display area of the same SCR that is displaying demographic information about the user of the SCR;

10 FIGs. 4, 5 and 6 are flow charts illustrating how the SCR of FIG. 3 is programmed to operate in accordance with one aspect of the invention;

FIG. 7 illustrates how an SCR is used in a store to redeem coupons and provide demographic information in accordance with another aspect of the invention;

15 FIG. 8 is a flow chart showing how the SCR is used to redeem coupons and to provide demographic information in the environment shown in FIG. 7;

FIG. 9 is a flow chart showing an alternate method for using the SCR to redeem coupons and to provide demographic information in accordance with the invention;

20 FIG. 10 is a block diagram of a wireless communication system in accordance with the present invention;

FIG. 11 is a flow chart depicting operations of the SCR for emulating an affinity card in accordance with the present invention;

25 FIG. 12 is a flow chart depicting an operation of the SCR for transferring affinity codes to a second SCR in accordance with the present invention; and

FIG. 13 illustrates how an SCR is used in a store to emulate an affinity card to obtain discounts and to provide information about purchases in accordance with the present invention.

30

### Description of the Preferred Embodiment

35 With this invention, advantage is taken of an SCR's ability to reliably receive, store and display information; this ability, in conjunction with the efficiency and reliability of bar code scanners, is used according to the invention to provide information about a user of an SCR who uses coupons,

and to provide a method for the SCR user to efficiently receive and redeem coupons, as well as to emulate affinity cards.

According to the invention, the user's SCR stores information about the user, and that information is displayed in bar code format, at a point-of-sale where the user desires to redeem a coupon, such as in a store where purchased items are paid for. A bar code scanner located at the point-of sale reads the user information displayed by the SCR, thereby enabling the sponsor of the redeemed coupon to learn demographic information, including buying habits, about the person who redeemed the coupon. This allows the coupon's sponsor to adapt his marketing plans to actual consumer preferences, and to send, to the SCR user, coupons that the user is likely to want. In the case of affinity card emulation, the information about the user can be as simple as a unique identification number, which the store's computer cross-references to the user's identity and buying habits, which have been collected and stored from previous shopping trips to the store.

An SCR 10 that operates according to the invention is shown in FIG. 1 in the form of a pager. The illustrated SCR has circuitry including an antenna 12, a conventional RF demodulator 14 and a digital decoder 16 for receiving and decoding incoming messages, including coupons and affinity codes. Messages received by the antenna 12 are demodulated by the RF demodulator 14 to provide demodulated analog data as an input to the decoder 16 which may also be of conventional construction.

The signal output from the decoder 16 is decoded digital data that is applied as an input to a processor 18 which may be, for example, a MC68HC05 made by Motorola, Inc. The processor 18 may also be conventional, but it is programmed to cause the SCR 10 to operate according to the invention, as discussed in more detail later.

The processor 18 includes a CPU (Central Processing Unit) 20 and a ROM (Read Only Memory) 22 which stores the instruction program for the CPU. The ROM 22 preferably also stores an identifier, e.g. a serial number, for uniquely identifying the SCR during affinity card emulation. The processor also includes an external port interface 24 for coupling signals from the CPU 20 to a display driver 26. The latter device drives a display 28, which may be a conventional liquid crystal display, for displaying decoded messages (including coupons and affinity card codes), menus, advertisements, prompts, etc. The display 28 has a pixel resolution that is

small enough to display bar codes that can be accurately read by conventional bar code scanners.

To generate a user alert upon receipt of a message, the CPU is coupled to an alert generator 30 whose output is coupled to the input of a speaker driver 32. A speaker 34 is coupled to the output of the driver 32 for  
 5 generating an audible alert upon receipt of a message that is directed to the SCR 10.

Timers 36 are coupled to the CPU 20 to give a time base for collecting data from the digital decoder (16) at precise intervals. They also keep time  
 10 duration for alerts and possibly a real time clock for the user interface.

The user can control various functions of the SCR by means of user actuatable buttons 38 that are coupled to the CPU via a button interface 40 and an external port interface 42. The buttons may be used to cause a received coupon or other form of message to be shown on the display 28, to  
 15 scroll through messages, and to input information. The CPU 20 is also coupled to a communication port 27 for communicating with a second SCR. The communication port 27 preferably communicates wirelessly, using well-known techniques, e.g., radio or infra-red techniques. It will be appreciated that, alternatively, the communication port 27 can communicate through a  
 20 wired connection to the second SCR, as well.

The processor 18 also includes a RAM (Random Access Memory) 44 that comprises a message memory 46, a demographic database 48 and a program memory 50. The demographic database 48 is a memory which stores demographic information about the user of the SCR. That  
 25 demographic information is displayed in bar code format as discussed later. The RAM 44 also includes a coupon memory 51 for storing received coupons, and an affinity code memory 49 for storing affinity codes. It will be appreciated that the RAM 44 preferably is of a non-volatile type, such as FLASH memory, to prevent loss of coupons and affinity codes should power  
 30 be interrupted to the SCR 10.

The program memory 50 acts as a scratch pad memory for temporary storage of new messages (before they are stored in the message memory 46) or the results of computations made by the CPU 20.

The SCR 10 is used in a process that can be implemented in a number  
 35 of ways to achieve the objectives of the invention. In a first way, a coupon is stored in the SCR, and that coupon is redeemed when it is displayed at a point-of-sale and read by a bar code scanner. FIG. 2 illustrates an example of

what the SCR display looks like when a coupon is being displayed. In this example, the display 28 shows the coupon in bar code format at 52, a numeric equivalent of the coupon at 54, and alpha-numeric information 56 which gives user-readable information concerning the coupon. The alpha-  
 5 numeric information 56 allows the SCR user to identify the displayed coupon 52 and to understand how it is to be used. Alternatively, in the case of affinity card emulation, the bar code format at 52 identifies a unique code assigned to the affinity group being emulated. In addition, the numeric equivalent of the unique code is displayed at 54, and the name of the affinity  
 10 group is displayed by the alpha-numeric information 56.

In FIG. 3, the user's demographic information is shown on the display 28. That information is shown in user-readable form at 58, in a bar code format at 60, and as a numeric equivalent at 62. Although only a single bar code is shown in FIG. 3, it should be understood that multiple bar codes may  
 15 be desirable to present additional or more detailed demographic information. Also, it is not necessary that the coupon and the demographic information 60 be presented separately on the display 28. The coupon and the information 60 may be displayed side-by-side, simultaneously if the display 28 is large enough to accommodate both of them.

20 A preferred way of operating an SCR with the bar coded displays of FIGs. 2 and 3 will now be explained with reference to the flow charts shown in FIGs. 4, 5 and 6.

Referring first to FIG. 4, step 70, demographic data concerning the user is loaded into the SCR's demographic data base 48 (FIG. 1), and/or the  
 25 demographic data base 48 is updated with new or additional demographic information. An initial loading of demographic information preferably occurs when the user signs up for messaging service. The demographic information can include the user's age, sex, location, interests, etc. Updates to the initially loaded information can occur through an over-the-air  
 30 question-and-answer dialog with the user if the SCR is a two-way device. In this manner, a more complete demographic database is built into the SCR.

Additional updates of the demographic database preferably occur as the SCR is used to redeem coupons or to otherwise make purchases. Each such use of the SCR preferably causes the SCR's demographic database to be  
 35 updated to reflect the use of the SCR, thereby to accurately indicate the user's buying habits.



In the next step 72, the SCR waits for an "event" to occur. Such events include receipt of a message (FIG. 5), and the user reading a message (FIG. 6). The activities associated with the event are processed at step 74, after which the program returns to step 72 to await the next event. The details of  
 5 step 74 are shown in FIG. 5 for the case where the event is receipt of a message, and in FIG. 6 for the case where the event is the user requesting to read a message.

Referring now to FIG. 5, at the first step 76 an "event" occurs in the form of a message being received by the SCR. At the next step 78, a  
 10 determination is made as to whether the received message is a personal message. If the answer is affirmative, the program proceeds to step 80 where the SCR alerts the user that a message has arrived, and the message is saved in a personal memory which may be a segment of the message memory 46 or a separate memory reserved for personal messages. The program then  
 15 returns to step 72, via mode A, to await the next event.

If the received message is determined not to be a personal message at step 76, the program proceeds to step 82 to indicate that a maildrop message has arrived. If the maildrop message is determined not to be a coupon or affinity code (step 84), the program advances to step 86 where the maildrop  
 20 message is saved in a maildrop memory that may be a segment of the message memory 46 or a separate memory reserved for maildrop messages. Maildrop messages that become saved per step 86 are typically advertisements, news items, and the like.

If a bar coded coupon or affinity code is identified at step 84, the  
 25 program proceeds to step 88. At this point, the SCR generates an alert for the user and saves the coupon in the coupon memory 51 or the affinity code in the affinity code memory 49, as appropriate. The program then returns to step 72 (FIG. 4) to await the next event.

Referring now to FIG. 6, step 90, the "event" which now occurs is that  
 30 the user requests to read a message. The next step 92 asks whether the user wishes to read a personal message and, if the answer is affirmative, a personal message is displayed (step 94), and the program returns to step 72 via node A.

If the requested message is not a personal message, step 96 asks  
 35 whether the requested message is an advertisement. If the answer is affirmative, step 98 causes the advertisement to be displayed and the

demographic database 48 to be updated to reflect the user's interest in this particular advertisement. The program then returns to step 72.

If step 96 finds that the requested message is not an advertisement, the program proceeds to step 100 to determine if the requested message is a content message. A content or maildrop message may include sports, weather, stock, etc. information. If the answer is affirmative, the next step 102 causes the content message to be displayed and the demographic database to be updated to reflect the user's interest in the displayed message. The program then returns to step 72.

If the answer to step 100 is negative, the SCR asks the user whether he wishes to view a coupon. An affirmative answer causes the coupon information to be displayed (step 106) in alpha-numeric form as at 56 in FIG. 2. No bar code is displayed per this step. Preferably, steps 104 and 106 are implemented in a loop such that the user can view each stored coupon. The program then returns to step 72.

If the user does not wish to view a coupon at step 104, the program proceeds to step 108 where the user is asked if he wishes to redeem a coupon. A negative answer returns the program to step 72, while an affirmative answer causes the program to advance to step 110.

The demographics that are stored in database 48 are accessed at step 110. At the next step 112, the SCR generates a bar code for the coupon that is to be redeemed, and another bar code for the demographic information that is to be displayed. These bar codes are generated using conventional techniques, such as those described in "The Bar Code Book", third edition, published by Helmers Publishing, Inc., copyright 1989, 1991, 1995.

The next step 114 causes the bar coded coupon and the bar coded demographic information to be displayed. If they are displayed separately, as shown in FIGs. 2 and 3, it is preferred that the coupon be displayed first. The coupon is then scanned so that its value can be automatically credited to the user. The bar code demographics are then displayed and scanned so they can be stored and used to identify the person, or the demographic characteristics of the person, who used the coupon. The bar coded coupons and the bar coded demographics information may also be displayed simultaneously.

After the bar codes have been displayed, the program proceeds to step 116 where the demographics database 48 is updated to reflect the user's redemption of the coupon. In the next step 118, the user is alerted so that he

can select an additional coupon to redeem, and the SCR displays a prompt (step 120) asking the user if he desires to see the next coupon. If the answer is negative, this cycle of coupon processing is complete, and the program returns to step 72. If the answer is affirmative, the old coupon is deleted  
 5 (step 122) and the next coupon is displayed (step 124) in alpha-numeric form to permit the user to read it. Then the program proceeds to step 126 where the SCR asks the user if he wishes to redeem the displayed coupon. If the answer is affirmative, the program returns to step 110 to go through the coupon redemption cycle again. If the answer is negative, the program loops  
 10 through steps 124 and 126 until all stored coupons have been displayed.

A second way of using the SCR to redeem coupons and to provide information about the SCR's user involves first storing user information (demographics) in the SCR. This can be done as described above. When the user desires to receive a coupon, such as when he enters a store to make a  
 15 purchase, the user causes the demographic information to be displayed on the SCR in bar code format. A bar code scanner, preferably located in or near the store, reads the bar coded demographic information and transmits the information to a computer that may be located in the store. The computer accesses a database of users, identifies the user who's bar code was  
 20 read, and determines the user's purchasing habits, as revealed by the information in the database. One or more bar coded coupons, selected according to the user's demographic information, are sent to the SCR, thus providing the user with coupon(s) that his buying habits predict he will be likely to use. A bar coded coupon is displayed on the SCR at a point-of-sale,  
 25 preferably in the same store, such that the coupon can be redeemed.

The method described immediately above will now be discussed in more detail with reference to FIGs. 7 and 8. In step 128, FIG. 8, the SCR user's demographics are stored in the SCR. As discussed previously, this may initially occur when the user signs up for messaging service, and  
 30 updates preferably occur as the SCR is used to redeem coupons, make purchases, etc.

Assume now that the user enters a store with his SCR 10 to make a purchase or to shop. The store 130 (FIG. 7) preferably includes a bar code scanner 132 in or near the store in a location that makes it convenient for the  
 35 user to have his SCR's display scanned. If the user wishes to receive one or more coupons for possible use in the store 130 (or in another store), he causes his SCR 10 to display his demographic information in bar code format, and

the scanner 132 reads those demographics (step 134). The scanned information is passed via a communication link 136 to a computer 138 that may be located within the store or in another location.

A demographic data base is stored in association with the computer 138 so that, upon receiving the user's demographics via link 136, the computer can access the database to identify the user and his purchasing habits (steps 140 and 142). Per the next step 144, the computer issues a coupon that is preferably unique to the user and that reflects the user's buying preferences, as determined by the computer 138. That coupon is issued as a bar code message for the user's SCR and is forwarded by a communication link 146 to a messaging system 148 (step 150). That system transmits the coupon message to the SCR 10, and the SCR 10 receives the coupon or coupons (step 152).

When the user reaches a point-of-sale 154, he causes the SCR to display, in bar code format, each coupon that he intends to redeem (step 156). A scanner 157, preferably located at the point-of-sale, reads the bar coded coupons displayed by the SCR, chooses to accept or not accept a coupon that has been used previously, and applies any applicable discount to the purchases made by the user (step 158).

At the next step 160, the computer 138 is notified of the coupon redemption by the user. This information is forwarded to the computer 138 via a communication link 162. The computer uses this information to update its associated demographics database (step 164). Preferably, any coupons redeemed by the user are deleted from the SCR's memory after a predetermined period of time, such as 24 hours (step 168).

~~A third way of redeeming coupons and collecting demographic information does not require that the SCR display a coupon in bar code format. This third way also involves storing user information (demographics) in the SCR. This can be done as described above. When the user desires to receive a coupon, such as when he enters a store to make a purchase, the user causes his stored demographic information to be displayed on the SCR in bar code format. A bar code scanner, preferably located in or near the store, reads the bar coded demographic information and transmits the information to a computer that may be located in the store. The computer accesses a database of users, identifies the user who's bar code was read, and determines the user's purchasing habits, as revealed by the information in the database. The computer selects one or more coupons, and~~

information concerning them is sent to the user's SCR. In this case, the coupons are not sent in bar code format, but in alpha-numeric form so the user can read the transmitted information and understand which coupons have been selected for him. Information concerning the selected coupons is also stored by the computer which is in communication with the point-of-sale. When the user reaches the point-of-sale, he again displays his demographic information and, responsive to that information, the selected coupons are automatically applied to the user's purchase. This technique is demonstrated by the flow chart of FIG. 9.

In step 170, the user's demographics are stored in the SCR. As discussed previously, this may initially occur when the user signs up for messaging service, and updates preferably occur as the SCR is used to redeem coupons, make purchases, etc.

Assume now that the user enters a store with his SCR 10 to make a purchase or to shop. If the user wishes to receive one or more coupons for possible use in the store 130 (or in another store), he causes his SCR 10 to display his demographic information in bar code format at the scanner 132 which reads those demographics (step 172). The scanned information is passed via a communication link 136 to a computer 138 that may be located within the store or in another location.

Upon receiving the user's demographics via link 136, the computer accesses its associated database to identify the user and his purchasing habits (step 176). Based on the information in the database, the computer selects one or more coupons for the identified user and sends information concerning the selected coupons to the SCR 10. This information is preferably not in bar code format; it is in alpha-numeric form, much like the coupon information 56 in FIG. 2. This information is preferably sent to the SCR 10 by the computer 138 sending an appropriate instruction to the messaging system 148 via the link 146. The messaging system 148 then transmits a message containing the coupon information to the SCR 10. A record of the selected coupons is retained by the computer (step 180).

When the user reaches the point-of-sale 154, he causes the SCR to again display, in bar code format, his stored demographic information that is then read by a bar code scanner (step 182). This identifies the user who is at the point-of-sale, such as at a checkout register, and allows the computer to recall the coupons that it previously selected for this user. The bar codes on any items purchased by the user at this time are also scanned (step 184).

In the next step 186, the checkout register at the point-of-sale contacts the computer 138 to retrieve the coupons previously selected for this user. These coupons are then applied toward the user's purchases (step 188), and the computer's associated database is updated to reflect the user's use of the coupons and his purchases that were scanned in step 184.

The computer 138 may then, per step 190, instruct the messaging system 148 to send a message to the user's SCR to notify the user of the total coupon discounts that were applied in step 188. Information relating to the coupons that were used is deleted from the user's SCR within a predetermined time period, such as 24 hours, by means of programming within the SCR or by an instruction sent by the messaging system (step 192).

Referring to FIG. 10, an electrical block diagram depicts an exemplary wireless communication system in accordance with the present invention comprising an infrastructure portion 202 including a controller 212 and a plurality of conventional base stations 216, the communication system also including a plurality of selective call receivers 10. The base stations 216 preferably communicate with the selective call receivers 10 utilizing conventional radio frequency (RF) techniques, and are coupled by conventional communication links 214 to the controller 212, which controls the base stations 216.

The controller 212 is preferably a combination of the Wireless Messaging Gateway (WMG™) Administrator! paging terminal, and the RF-Conductor!™ message distributor manufactured by Motorola, Inc. The base stations 216 are preferably a combination of the RF-Orchestra! transmitter and RF-Audience!™ receiver manufactured by Motorola, Inc. The selective call receivers 10 are preferably similar to PageWriter™ 2000 data messaging units, also manufactured by Motorola, Inc., and having software modified in accordance with the present invention. It will be appreciated that other similar hardware can be utilized as well for the controller 212, the base stations 216, and the selective call receivers 10.

Each of the base stations 216 transmits RF signals to the selective call receivers 10 via an antenna 218. The base stations 216 preferably each receive RF signals from the plurality of selective call receivers 10 via the antenna 218. The RF signals transmitted by the base stations 216 to the selective call receivers 10 (outbound messages) comprise selective call addresses identifying the selective call receivers 10, and data messages originated by a caller, as well as commands originated by the controller 212 for adjusting operating parameters of the radio communication system. The RF signals preferably transmitted by the selective call receivers 10 to the base stations 216 (inbound messages) comprise responses

that include scheduled messages, such as positive acknowledgments (ACKs) and negative acknowledgments (NAKs), and unscheduled messages, such as registration requests. It will be appreciated that the present invention also can be utilized in a one-way messaging system, which transmits outbound messages but  
 5 does not handle inbound messages.

The controller 212 preferably is coupled by telephone links 201 to a public switched telephone network (PSTN) 210 for receiving selective call message originations therefrom. Selective call originations comprising data messages from the PSTN 210 can be generated, for example, from a conventional telephone 211  
 10 or a conventional computer 217 coupled to the PSTN 210. In addition, the controller 212 preferably is coupled through a conventional communication link 221 to a server 224 for wirelessly downloading coupons and affinity card codes to the SCRs in accordance with the present invention. It will be appreciated that, alternatively, the server 224 can be incorporated into the controller 212. It will be  
 15 further appreciated that a central database of affinity codes is preferably maintained to ensure that each affinity code activated is unique. The central database can be located, for example, in the server 224.

The over-the-air protocol utilized for outbound and inbound messages is preferably selected from Motorola's well-known FLEX™ family of digital selective call signaling protocols. These protocols utilize well-known error  
 20 detection and error correction techniques and are therefore tolerant to bit errors occurring during transmission, provided that the bit errors are not too numerous. It will be appreciated that other suitable protocols can be used as well.

FIG. 11 is a flow chart depicting operations of the SCR 10 for  
 25 emulating an affinity card in accordance with the present invention. First, the SCR user joins 302 an affinity group, e.g., the affinity group of a grocery store. This typically involves providing personal information, such as name and address, on an application card. Also, in accordance with the present invention, the SCR user provides the unique identification number stored in  
 30 the SCR 10. This information is then entered into a database in the store's computer. Also, the affinity code assigned to the store is entered 304 into the SCR. This can be done, for example, by manual entry of the affinity code through the buttons 38 of the SCR. Alternatively, the affinity code can be entered through the communication port 27 from a compatible device, or can  
 35 be wirelessly downloaded from the server 224 using well-known over-the-air (OTA) programming techniques. Next, the server 224 preferably wirelessly activates 308 the affinity code. It will be appreciated that, alternatively,

activation (and deactivation) of the affinity code by the server 224 can be omitted in some systems.

If the SCR has more than one affinity code programmed therein, then the SCR user uses the buttons 38 to select 310 an affinity code to emulate the appropriate affinity card corresponding to the store. The SCR then generates  
 5 a bar code on the display 28, the bar code comprising the selected affinity code and the unique identification number. This can be accomplished, for example, by letting the first N digits of the bar code represent the unique identification number, while the last M digits represent the affinity code. It  
 10 will be appreciated that, alternatively, the identification number and the affinity code can be displayed separately in bar code format, either simultaneously, when the display is large enough, or at different times on smaller displays.

FIG. 12 is a flow chart depicting an operation of the SCR 10 for  
 15 transferring affinity codes to a second SCR in accordance with the present invention. First, the SCR user initiates 402 an appropriate key sequence on the buttons 38 to tell the processor 18 to transfer the affinity codes to the second SCR. In response, the processor 18 accesses 404 the affinity code memory 49 and the communication port 27 to transfer the affinity codes,  
 20 preferably using well-known wireless communication techniques. It will be appreciated that, alternatively, wired techniques can be used by the communication port 27 to communicate with the second SCR.

FIG. 13 illustrates how an SCR is used in a store to emulate an affinity card for obtaining discounts and for providing information about the user's  
 25 purchases in accordance with the present invention. First, the SCR user (or shopper) arrives 502 at the checkout. If the SCR contains more than one affinity code, the SCR user then selects 504 the affinity card code appropriate for the store. The SCR then displays 506 the selected affinity card code and the unique identifier in bar code format. A conventional checkout scanner  
 30 then scans 508 the bar code to read the affinity code and the unique identifier. The store computer checks 510 the affinity code to determine whether it is the correct one for the store. If so, the store computer cross-references 512 the identifier with the store computer's database to identify the shopper and to record the shopper's purchases. The shopper then  
 35 receives 514 discounts programmed into the store computer for the store's affinity group members. The store computer then updates the database with the shopper's current purchases. If, on the other hand, at step 510 the affinity



code is not the correct one for the store, then the store computer causes 518 a visible or audible alarm indication, and the flow returns to step 504, where the SCR user selects the correct affinity code.

The techniques described herein are believed to benefit the users of  
5 SCRs by making coupons readily available to them, particularly coupons that they are likely to desire. Sponsors of the coupons also benefit because they can receive accurate demographic information without undue effort by the SCR users or by personnel of the stores where the coupons are redeemed. In addition, a convenient and cost effective way of consolidating affinity  
10 cards benefits both sponsors and users by eliminating card clutter, thereby making the affinity cards more convenient to use.

Although the invention has been described in terms of preferred embodiments, it will be obvious to those skilled in the art that various alterations and modifications may be made without departing from the  
15 invention. Accordingly, it is intended that all such alterations and modifications be considered as within the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

### CLAIMS

- 5 1. A method of providing information about a user of a selective call receiver who uses coupons, comprising:
  - a) storing user information in the selective call receiver;
  - b) displaying a coupon on the selective call receiver in bar code format such that the coupon can be read and redeemed at a point-of-sale; and
  - 10 c) displaying the user information on the selective call receiver in bar code format such that the information can be read at the point-of-sale.
2. A method as set forth in claim 1 including updating the user information in the selective call receiver to reflect use of the selective call receiver.
- 15 3. A method as set forth in claim 1 including updating the user information in the selective call receiver to reflect redemption of the coupon.
4. A method as set forth in claim 1 wherein the coupon is received by the
- 20 selective call receiver in the form of a transmitted message.
5. A method as set forth in claim 4 including the selective call receiver alerting the user that the coupon has been received.
- 25 6. A method as set forth in claim 5 including displaying the coupon on the selective call receiver in alpha-numeric form so that the coupon can be read by the user.
7. A method as set forth in claim 1 wherein step c) is executed after step b).

8. A method of providing information about a user of a selective call receiver who uses coupons, comprising:

- a) storing in the selective call receiver a coupon received in the form of a transmitted message;
- b) the selective call receiver alerting the user that the coupon has been received;
- c) displaying the coupon on the selective call receiver in bar code format such that the coupon can be read and redeemed at a point-of-sale;
- d) displaying stored user information on the selective call receiver in bar code format such that the stored user information can be read at the point-of-sale; and
- e) updating the stored user information in the selective call receiver to reflect use of the selective call receiver.

9. A method of providing information about a user of a selective call receiver who uses coupons, comprising :

- a) storing user information in the selective call receiver;
- b) displaying the user information on the selective call receiver in bar code format such that the user information can be read;
- c) receiving and storing in the selective call receiver a coupon that was transmitted in response to the user information being read; and
- d) displaying the coupon on the selective call receiver in bar code format at a point-of-sale such that the coupon can be redeemed.

10. A method as set forth in claim 9 wherein the coupon is unique to the user.

11. A method as set forth in claim 10 including deleting the coupon from the selective call receiver a predetermined time after the coupon has been redeemed.

12. A method as set forth in claim 9 wherein step b) occurs in a store, wherein the user information is read in the store, and wherein the store identifies the user by reference to a database of coupon users.

13. A method as set forth in claim 12 wherein the transmitted coupon is selected based, at least in part, on the identity of the user.
14. A method as set forth in claim 12 wherein the transmitted coupon is selected by the store, and wherein the store instructs a messaging system to transmit the coupon to the user's selective call receiver.
15. A method as set forth in claim 14 wherein the coupon is received and stored in the selective call receiver while the selective call receiver is in the store.
16. A method as set forth in claim 12 including updating the database to reflect redemption of the coupon.
17. A method of collecting information about a user of a selective call receiver who uses coupons in a store, comprising :
- a) storing user information in the selective call receiver;
  - b) displaying the user information on the selective call receiver in bar code format such that the user information can be read in the store;
  - c) identifying the user by comparing the user information to a database;
  - d) while the selective call receiver is in the store, receiving and storing in the selective call receiver a coupon that is unique to the user and that was transmitted in response to the user information being read; and
  - e) displaying the coupon on the selective call receiver in bar code format such that the coupon can be redeemed in the store.

18. A method of providing information about a user of a selective call receiver who uses coupons, comprising:

- a) storing user information in the selective call receiver;
- 5        b) displaying on the selective call receiver the user information in bar code format such that the user information can be read;        c)
- receiving and storing in the selective call receiver information concerning a coupon that is made available for the user in response to the user information being read; and
- 10       d) displaying the user information on the selective call receiver in bar code format so that the user information can be read at a point-of-sale, and the coupon can be applied to a purchase by the user.

19. A method as set forth in claim 18 wherein step b) occurs in a store,  
15       wherein the user information is read in the store, and wherein a computer generates the coupon based on the user information.

20. A method as set forth in claim 19 wherein bar codes on purchased items are read at the point-of-sale, and wherein the computer applies applicable  
20       coupons to the purchased items.

21. A method as set forth in claim 19 wherein the computer can access a data base of coupon users, and wherein the computer updates the database to reflect coupon use.

25

22. A method as set forth in claim 19 including transmitting to the selective call receiver information indicating total coupon discounts available to the user.

30       23. A method as set forth in claim 18 including deleting the coupon from the selective call receiver a predetermined time after the coupon has been redeemed.

24. A method of providing information about a user of a selective call receiver who uses coupons, comprising:

- a) storing user information in the selective call receiver;
- 5        b) displaying on the selective call receiver the user information in bar code format such that the user information can be read in a store and compared to information stored in a database;
- c) receiving and storing in the selective call receiver information concerning an available coupon that is selected based, at least in part, on the user information read in
- 10      the store;
- d) displaying the user information on the selective call receiver in bar code format so that the user information can be read at a point-of-sale, and the coupon can be applied to a purchase by the user; and
- e) updating the database to reflect use of the coupon by the user.

15

25. A method for emulating an affinity card in a wireless communication system, the method comprising in a selective call receiver the steps of:

- storing an affinity code for identifying an affinity group to
- 20      which the selective call receiver belongs;
- storing an identifier that uniquely identifies the selective call receiver; and
- generating a bar code on a display of the selective call receiver, the bar code comprising the affinity code and the identifier, and able to be
- 25      read by a conventional bar code reader.

26. The method of claim 25, further comprising the step of wirelessly downloading the affinity code from a server coupled to the wireless communication system, to the selective call receiver.

30

27. The method of claim 25, further comprising the step of wirelessly controlling operability of the affinity code in response to instructions from a server coupled to the wireless communication system.

28. The method of claim 25, further comprising the step of  
maintaining a central database of affinity codes to ensure that  
each affinity code activated is unique.

5

29. The method of claim 25,  
wherein the step of storing an affinity code comprises the step  
of storing a plurality of affinity codes, and  
wherein the generating step comprises the steps of:  
10 selecting, by a user of the selective call receiver, one of  
the plurality of affinity codes, thereby determining a selected affinity code;  
and

generating the bar code on the display, the bar code  
comprising the selected affinity code and the identifier.

15

30. The method of claim 25, further comprising the step of  
transferring the affinity code from the selective call receiver to a  
second selective call receiver.

20

31. A selective call receiver for emulating an affinity card in a wireless  
communication system, the selective call receiver comprising:  
an RF demodulator for receiving and demodulating a message;  
a processor coupled to the RF demodulator for processing the  
message; and

25

a display coupled to the processor for displaying the message  
and for displaying a bar code,

wherein the processor is programmed to:

store an affinity code for identifying an affinity group to which  
the selective call receiver belongs;

30

store an identifier that uniquely identifies the selective call  
receiver; and

generate the bar code on the display, the bar code comprising  
the affinity code and the identifier, and able to be read by a conventional bar  
code reader.

35

32. The selective call receiver of claim 31, wherein the processor is further programmed to cooperate with a server coupled to the wireless communication system to

wirelessly download the affinity code from the server.

5

33. The selective call receiver of claim 31, wherein the processor is further programmed to cooperate with a server coupled to the wireless communication system to

wirelessly control operability of the affinity code in response to

10 instructions from the server.

34. The selective call receiver of claim 31, further comprising a button interface coupled to the processor for providing control of the selective call receiver by a user,

15 wherein the processor is further programmed to:

store a plurality of affinity codes, and

cooperate with the button interface to allow selection, by the user of the selective call receiver, of one of the plurality of affinity codes, thereby determining a selected affinity code; and

20 generate the bar code on the display, the bar code comprising the selected affinity code and the identifier.

35. The selective call receiver of claim 31, further comprising a communication port coupled to the processor for

25 communicating with a second selective call receiver,

wherein the processor is further programmed to:

transfer the affinity code through the communication port to the second selective call receiver.



1/10

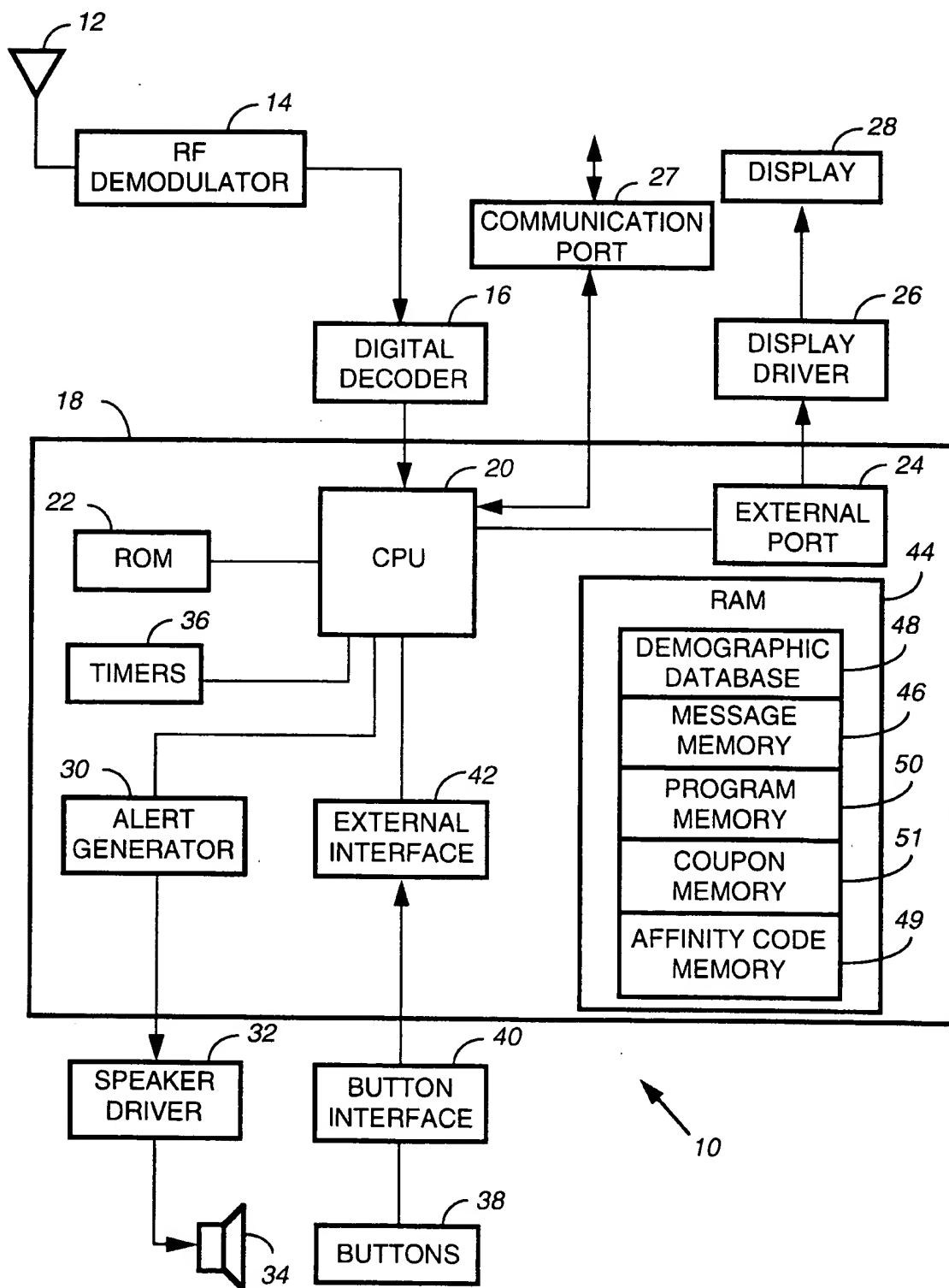
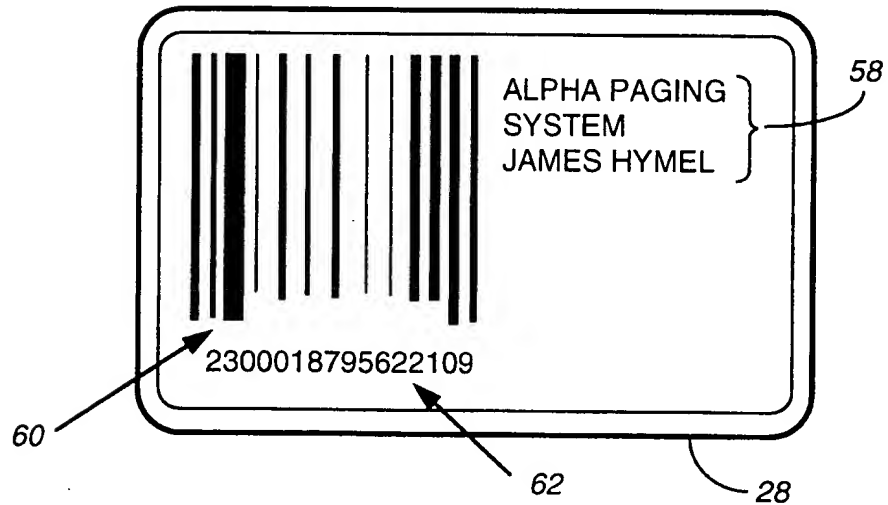


FIG. 1

2/10

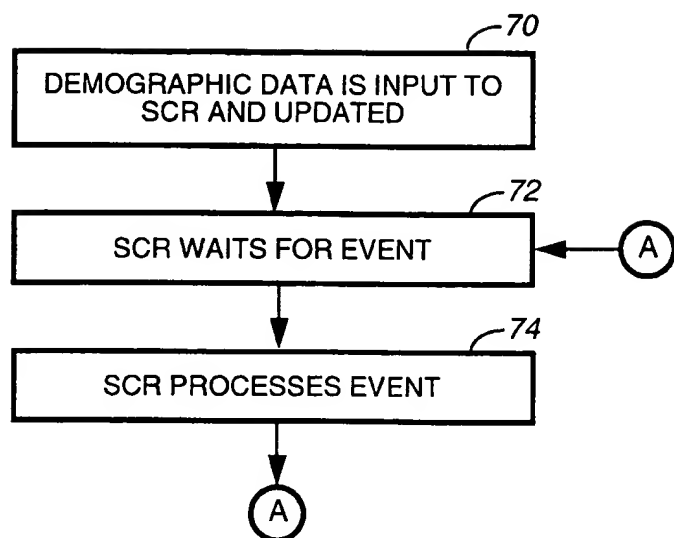
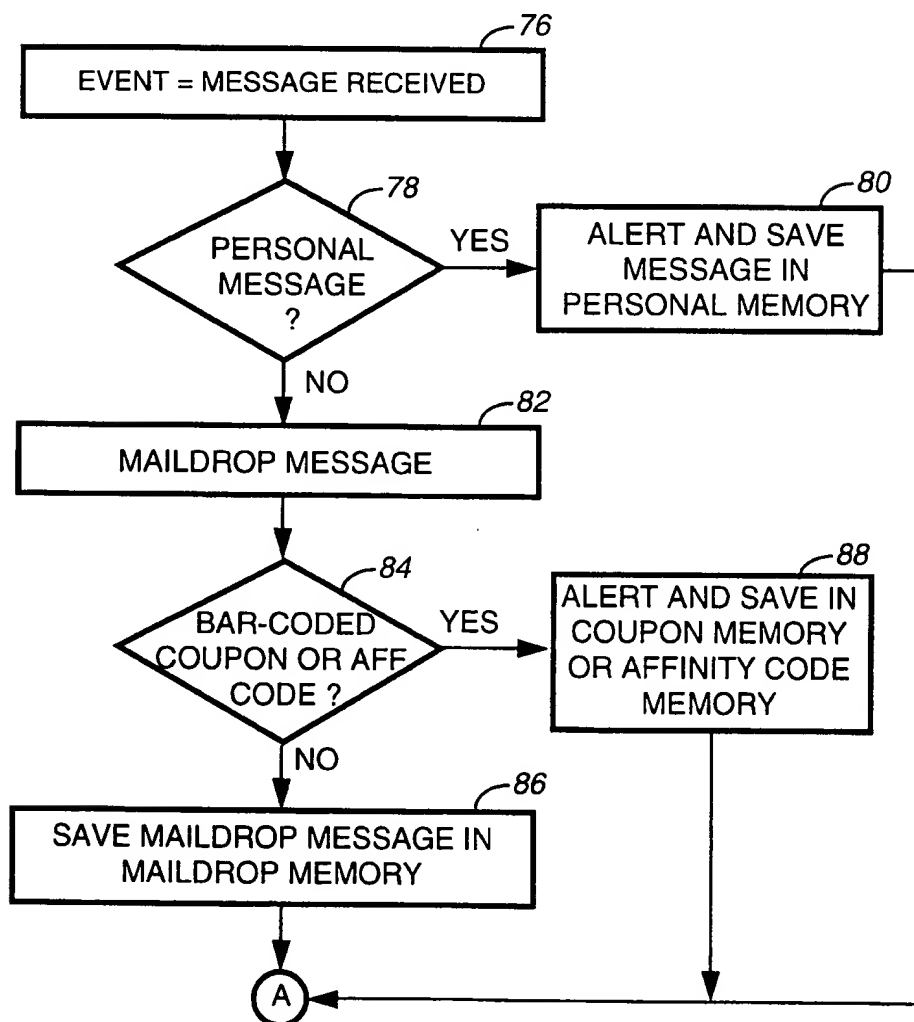


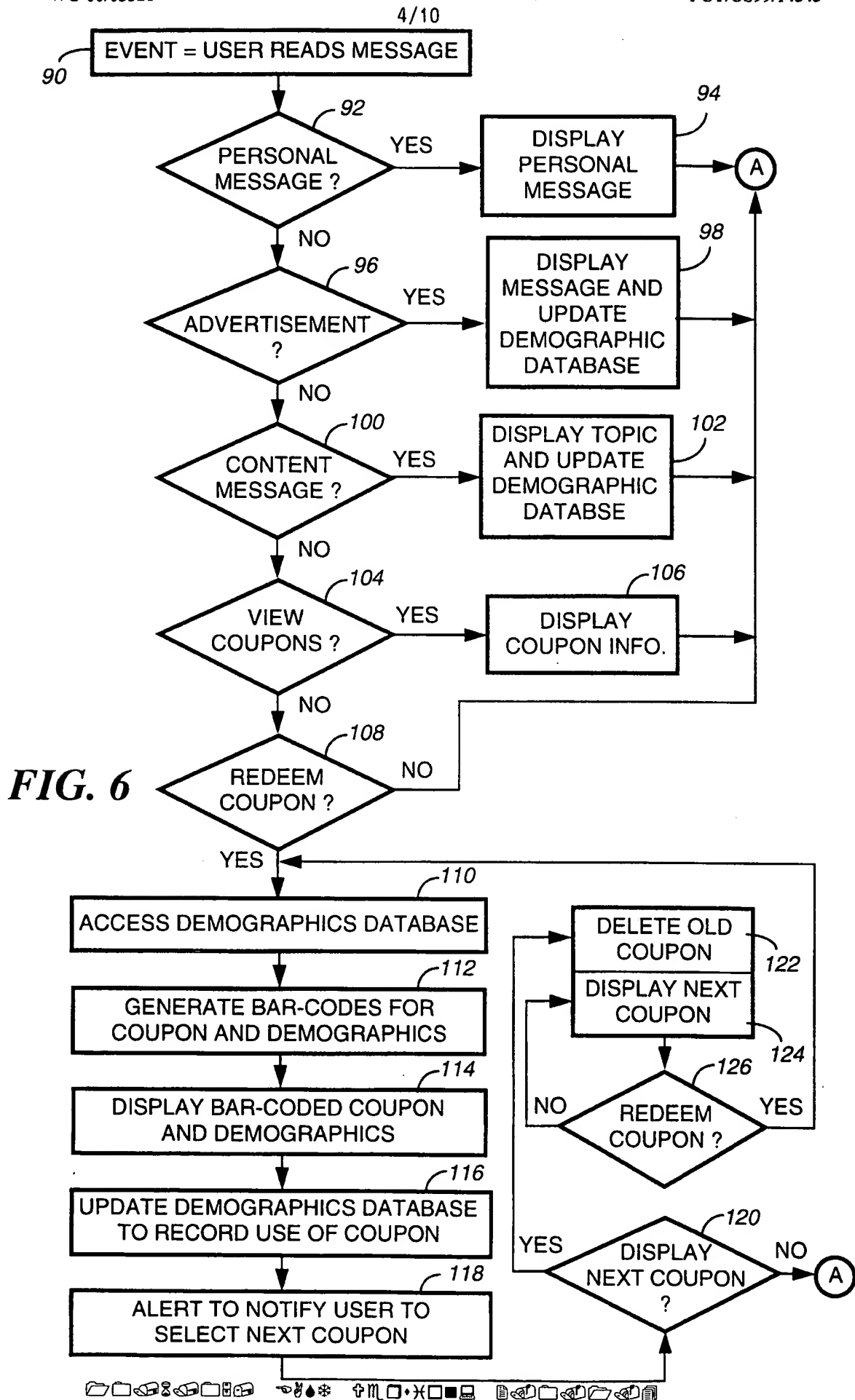
**FIG. 2**



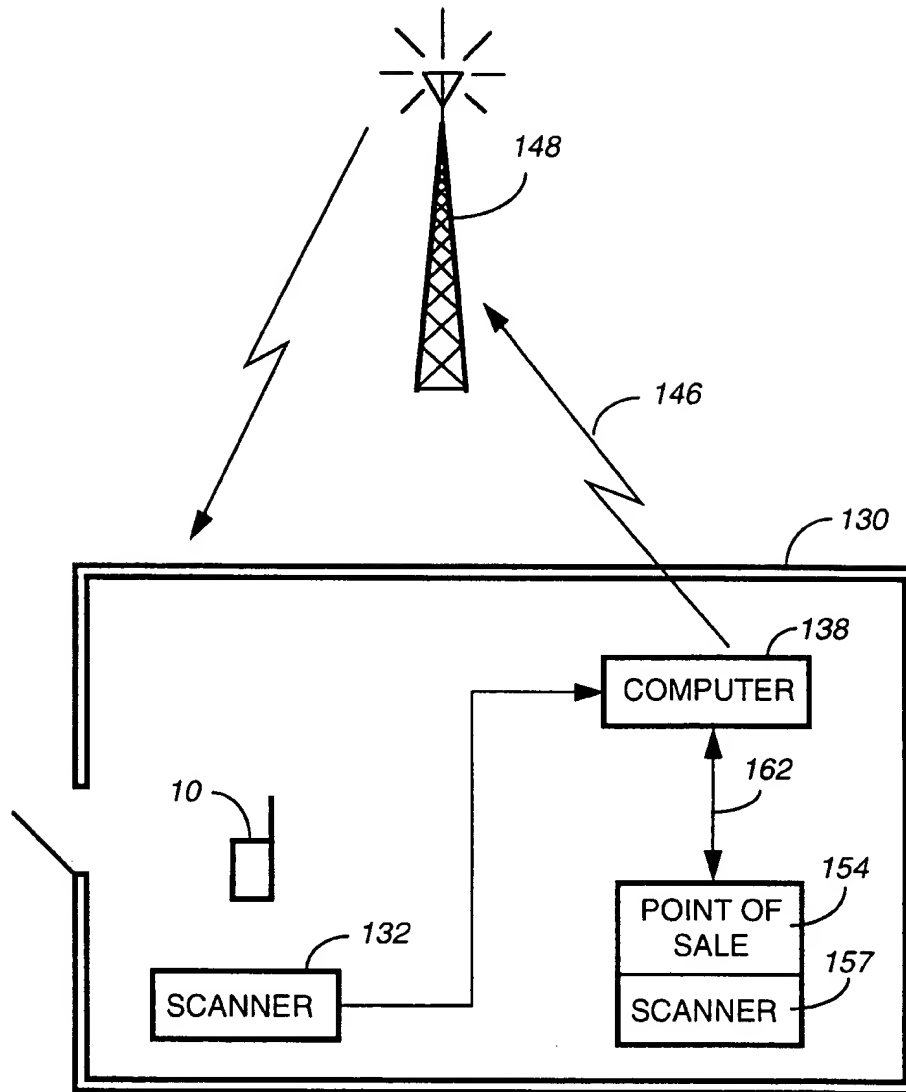
**FIG. 3**

3/10

**FIG. 4****FIG. 5**



5/10

**FIG. 7**

6/10

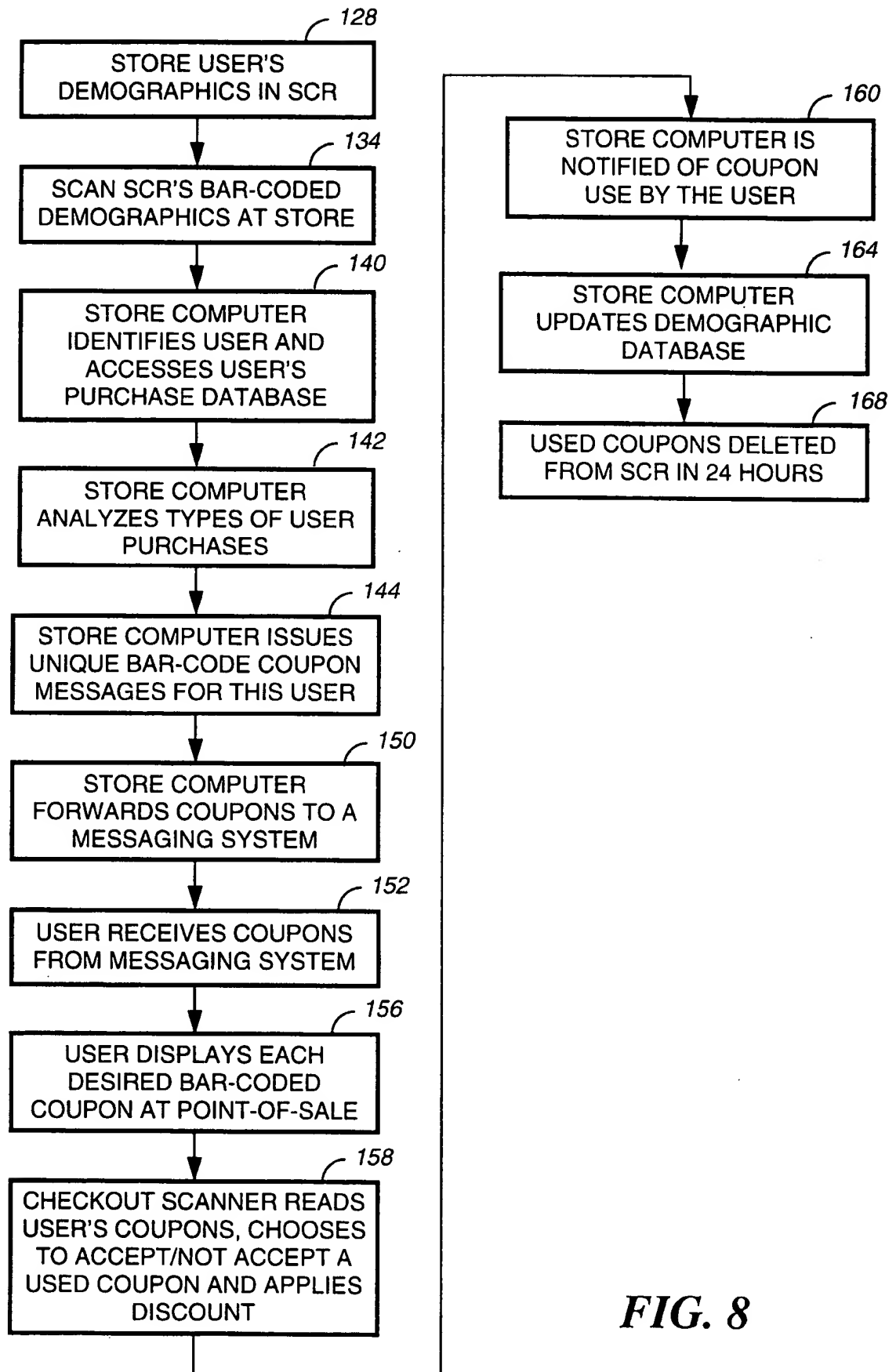


FIG. 8

7/10

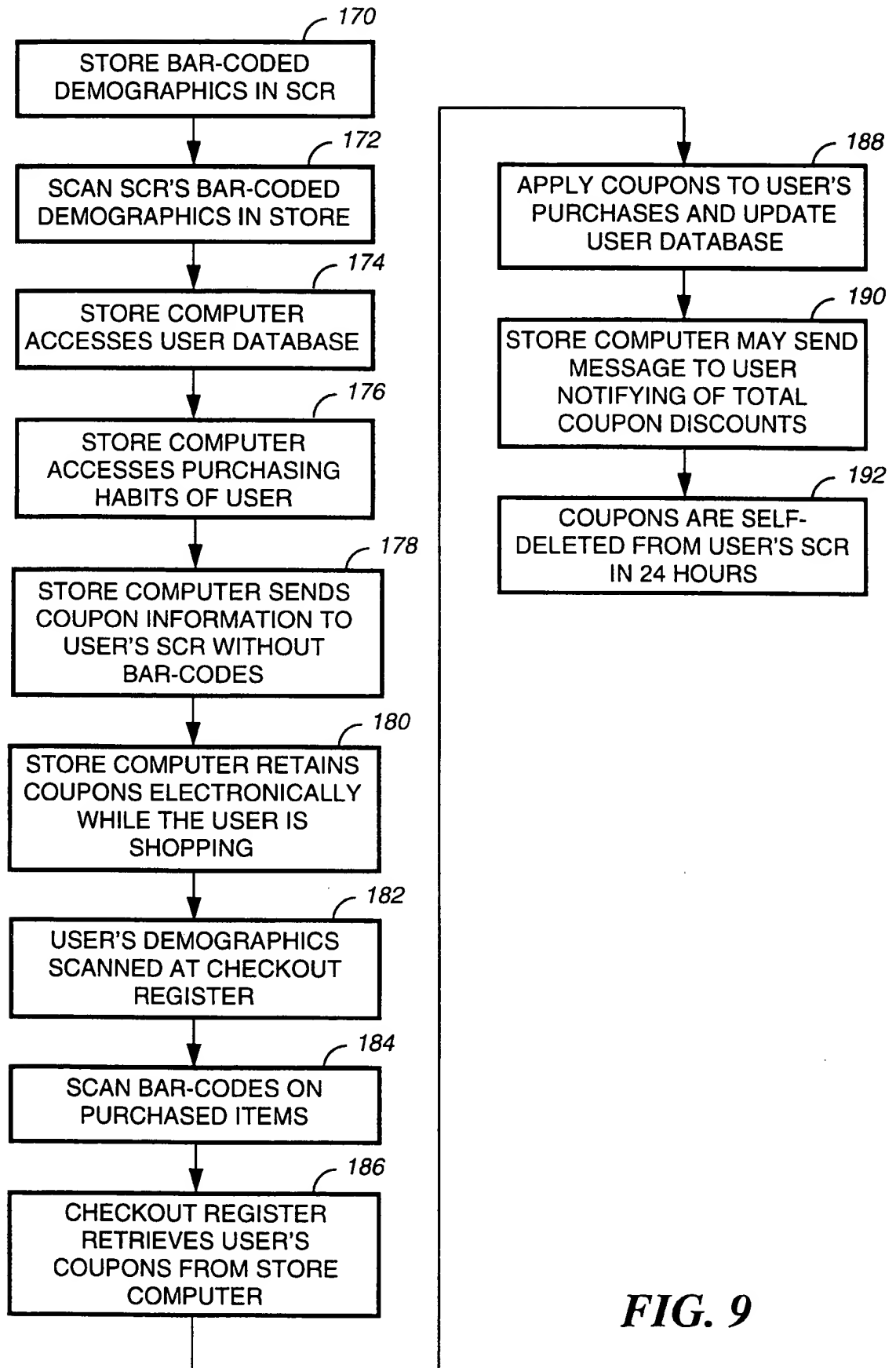
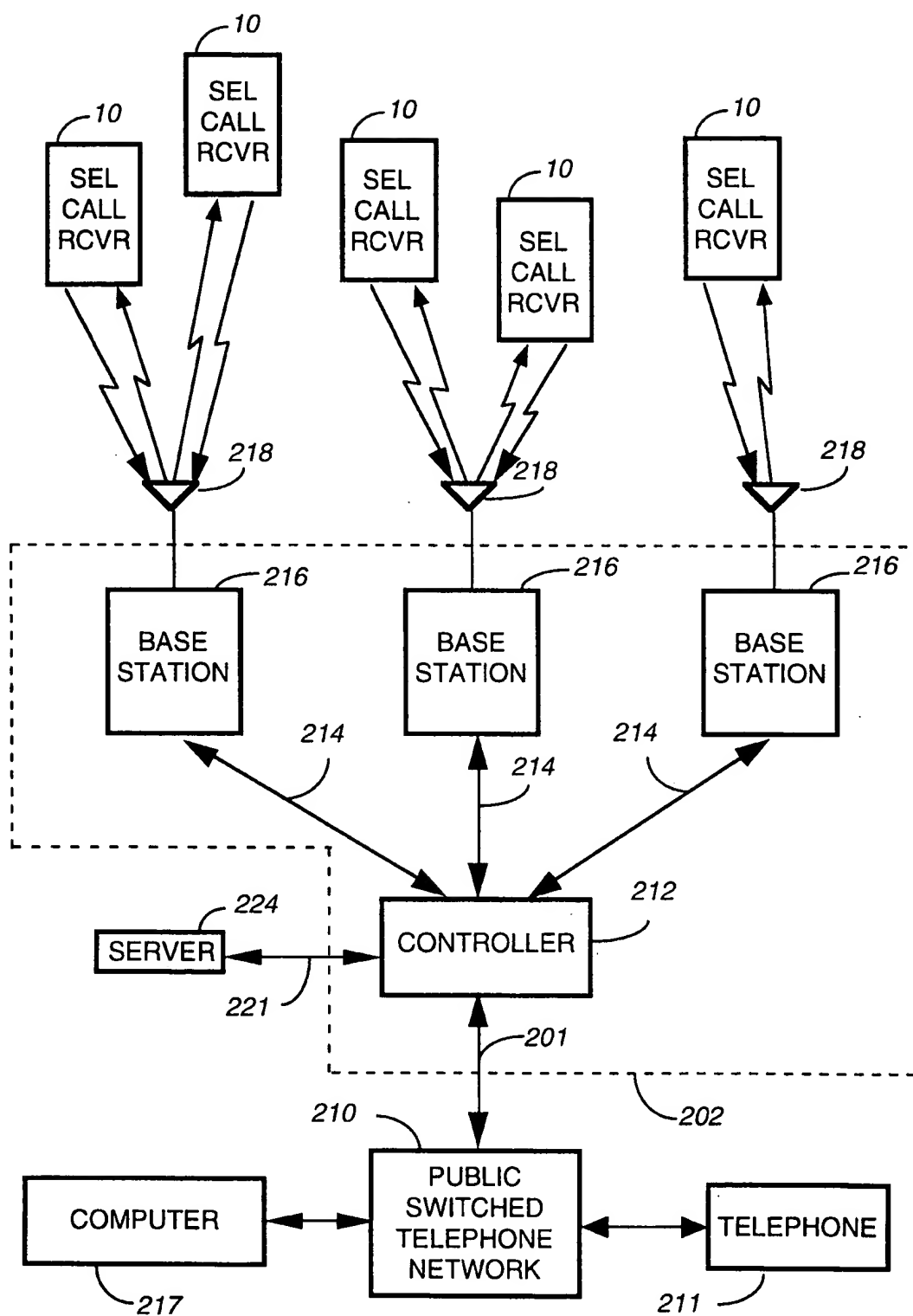


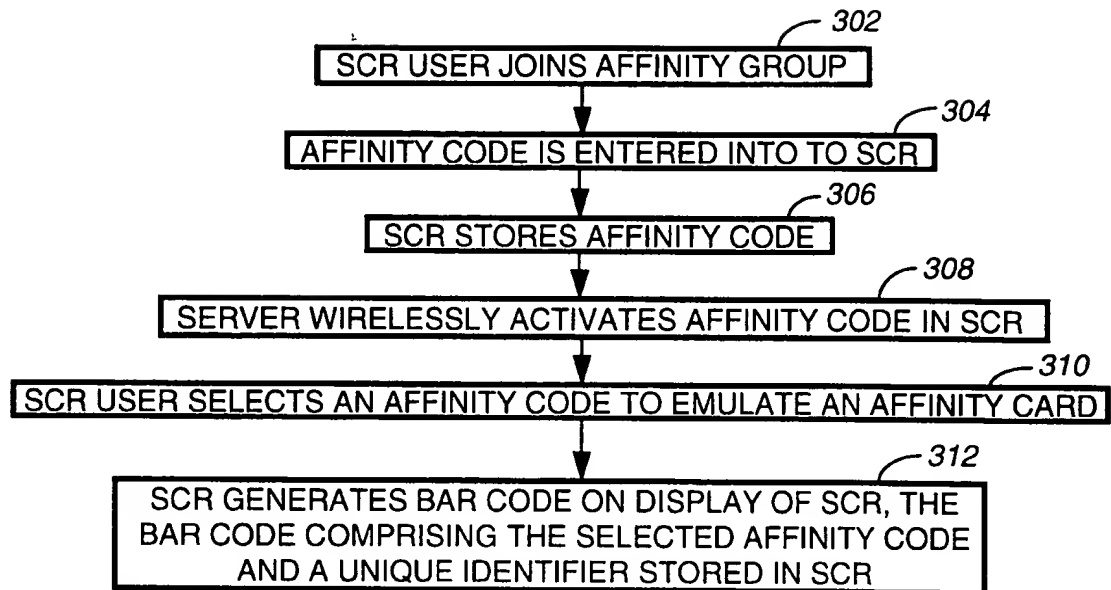
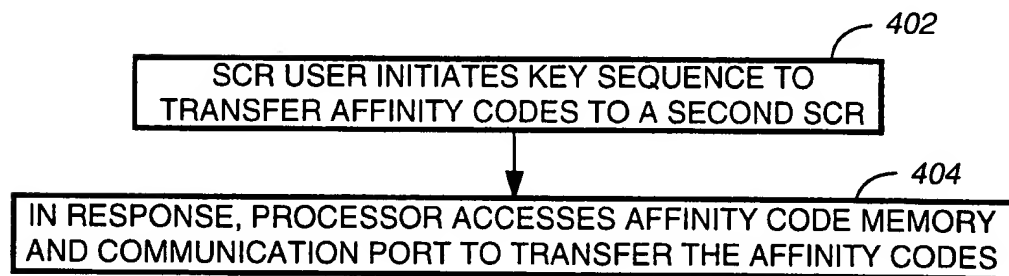
FIG. 9

8/10

**FIG. 10**



9/10

*FIG. 11**FIG. 12*

10/10

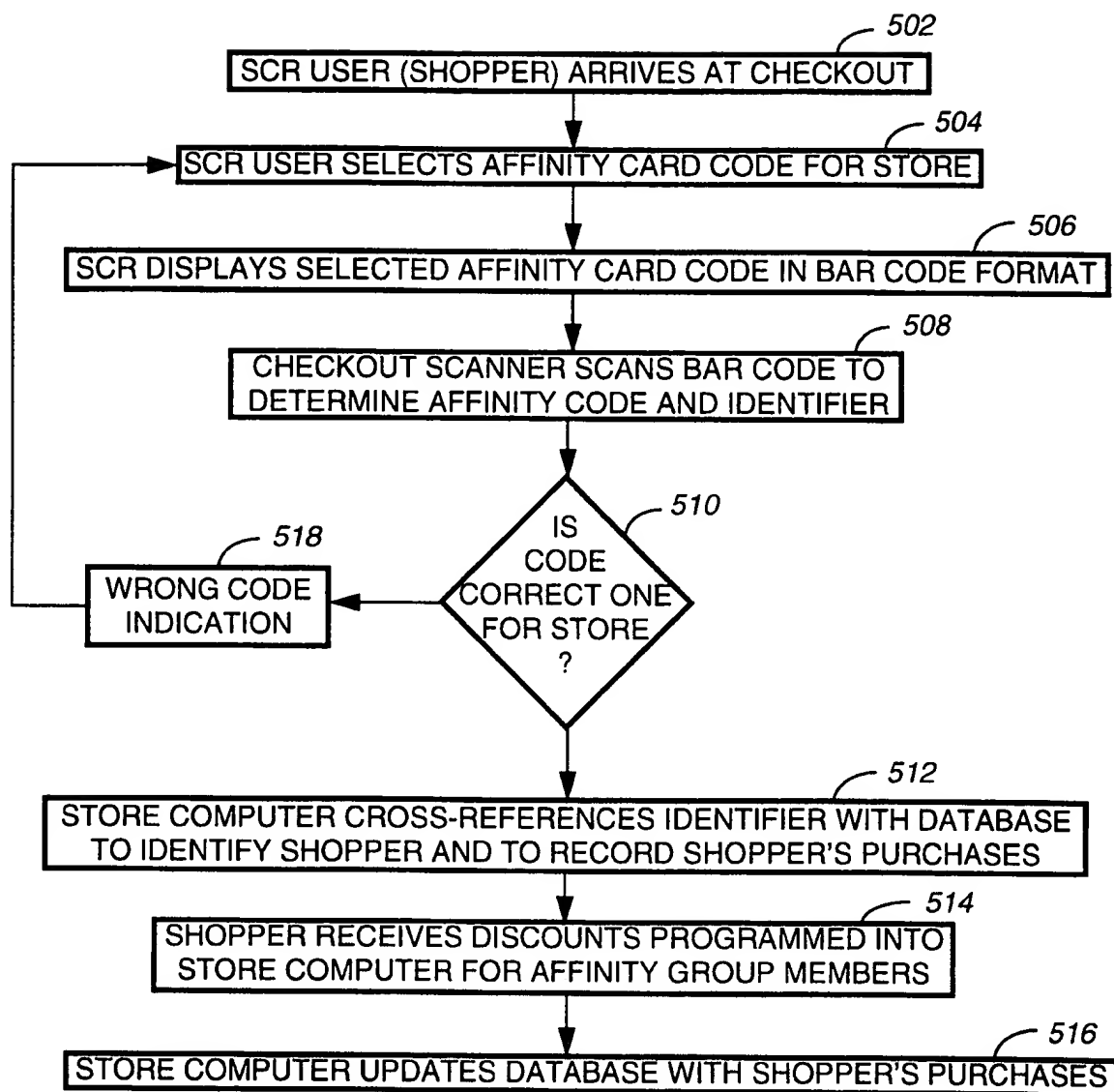


FIG. 13

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US99/14343

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : GO6F 17/00, 17/60, 5/00, 7/08

US CL : 235/381, 380, 382, 375, 379; 705/10, 11

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 235/381, 380, 382, 375, 379; 705/10, 11

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
NONE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y, P	US 5,915,243 A (SMOLEN) 22 June 1999 (22/06/99), the entire document.	1-35
Y, E	US 5,932,869 A (GOTTLICH et al.) 03 August 1999 (03/08/99), the entire document.	1-35
Y, P	US 5,870,030 A (DELUCA et al.) 09 February 1999 (09/02/99), the entire document.	1-35
Y, P	US 5,909,673 A (GREGORY) 01 June 1999 (01/06/99), the entire document.	1-35
Y, P	US 5,832,457 A (O'BRIEN et al.) 03 November 1998 (03/11/98), the entire document.	1-35

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

02 SEPTEMBER 1999

Date of mailing of the international search report

19 OCT 1999

Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

THIEN LE

Telephone No. (703) 305-3500